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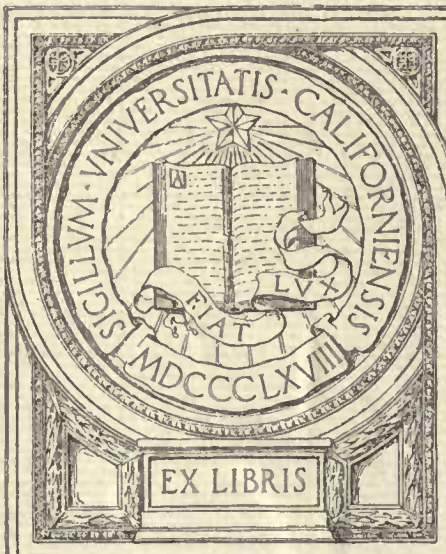
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MINUTES OF THE DISCUSSION

BETWEEN THE

Nile Projects Commission and the Committee of Egyptian Engineers.

AT THE

Public meeting held on 22nd June 1920.

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Application for copies to be made to Abdalla Pasha Wahby,

Munira, CAIRO.

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To The Nile Projects Commission
with compliments
Abdallah Wahby
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PUBLIC MEETING

OF THE

NILE PROJECTS COMMISSION.

HELD AT THE LEGISLATIVE ASSEMBLY ROOM ON TUESDAY 22nd JUNE 1920.

A meeting of the Committee of Egyptian Engineers and the Nile Projects Commission was held on Tuesday 22nd June 1920 at 9 a.m. in the Legislative Assembly room. Those who were present of the Projects Commission were:- Mr. Gebbie, Persident; Mr. Cory ,Member; Mr. Capes, Secretary, and his assistant, Mr. Wishlade. Doctor Simpson, the third Member of the Nile Projects Commission, was not present. Mahmoud Eff. Aly, the Engineer, came with the Commission for interpreting when necessary.

Those who were present of the Egyptian Engineers Committee were :— His Excellency Abdulla Pasha Wahby, Mohamed Bey Ismail, Abdel Kawy Eff. Ahmed and Ibrahim Eff. Zaki. Doctor Mahgub Bey Sabbit also attended. His Excellency Mussa Ghaleb Pasha, Member of the Egyptian Engineers Committee, was not present, and His Excellency Abdulla Pasha Wahby apologized for his absence, stating that he could not come on account of illness but that he had already explained his views regarding these projects, before the Commission, on their visit to him at his house at his invitation.

Sir Murdoch MacDonald, representing the Public Works Ministry, Mr. Molesworth, Inspector General of Projects, P.W.M., Sir Edgar Bernard, the Financial Secretary, representing the Sudan Government, Mr. Frazer, the Director of Lands Department, Sudan Government, Mr. Newhouse, Inspector White Nile Division, Mr. Prowde, Inspector Blue Nile Division, and Mr. Hurst, the Director of the Physical Department, P.W.M., were all present.

Mr. Gebbie. — " We have read your criticisms with very great interest, and want to ask you some questions." [He then gave his Excellency Abdullah Wahby Pasha a note which contained the summary of the criticisms written in the Report of the Egyptian Engineers Committee.]

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Wahby Pasha. — Our report is an adequate answer to any question or explanations you want.

Our "criticisms" on these projects are only from the technical point of view without touching upon other matters and our main object is that they should be carefully studied and a correct and right conclusion arrived at.

Mr. Gebbie. — We merely want some further information. It is evident that Egypt is short of water, and the project for increasing the supply is criticised pretty strongly, and we would like to know if you have any proposals to put forward in order to obtain the extra supply

Zaki Eff. — The Committee of the Egyptian Engineers had no such opportunity of studying these Nile Projects like the British Engineers of the Public Works Ministry; so, the Committee is sorry to be unable to put forward their personal proposal regarding alternative projects. The Committee has confined its researches and investigations to pointing out the harmfulness of these projects; their main purpose is to prove that these projects are against the interests of Egypt and the Egyptians, and if they have proved this, then, the Egyptian Engineers are ready, when they have studied the Nile sufficiently carefully, to put forward alternative projects.

Mr. Gebbie. — Do you say that at the present time Egypt needs more water ?

Abdel Kawy Eff. — It is necessary.

Mr. Gebbie. — You have asked a number of questions and I believe a representative of the Public Works Department will reply to them (1).

Abdel Kawy Eff. — We wish to know whether the Sudan Government agrees with the projects in question or raises any objection and if the latter is the case, then what are the reasons for that ?

Mr. Frazer. — The Sudan Government is substantially in agreement. We are prepared to acquiesce in the construction of the Gebel Aulia Reservoir as it is in our interests, it may not be the site we should have chosen for ourselves, however, we raise no objection.

Sir Murdoch MacDonald. — The Irrigation Office of the Sudan is under the Irrigation Department of the Egyptian Ministry of Public Works, and as a ministry we decide what we think are the best schemes for developing the regulation of the Nile and the increase of water. The Sudan Government has never raised any objections .

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(1) These questions have not yet been anwsered by the Ministry. Also the Ministry has no record of the Nile water that passed down to the Mediterranean.

MR. GEBBIE. — We may take it that the Sudan Government has no objections to these schemes.

ABDEL KAWY EFF. — Was the basis put by Sir William Garstin, 15 years ago, which insists that the Public Works Ministry only should have the complete authority on the Nile from the mouth to the source, and considering Egypt and the Sudan as *one* body, followed in framing these projects ?

SIR MACDONALD. — Yes.

ABDEL KAWY EFF. — Why is a representative of the Sudan Government here in this committee and also in the previous ones ?

SIR MACDONALD. — The Sudan Government representative will answer that.

MR. FRAZER. — Some criticisms were put forward against the Sudan Government, so we came to prove their unsoundness.

ABDEL KAWY EFF. — Why does the Sudan Government Representative answer this ?

SIR MACDONALD. — I have replied. I am acting as Adviser to the Sudan as well as Adviser to the Public Works Ministry of Egypt, and the Sudan Government are fully entitled to be heard as the projects may affect them.

WAHBY PASHA. — If the Adviser for the Public Works is representing them, why has the Sudan Government made an agreement with the Sudan Plantation Syndicate, agreeing to give them water, land, and also money, without his knowledge ?

SIR MACDONALD. — I am their representative for the engineering side, I do not know anything about that.

WAHBY PASHA. — How can it be that the Sudan Government makes a contract with a company and agrees to give them what is stated above, without showing the Egyptian Government the contract terms, though these projects were submitted to the English Parliament and approved by his Majesty the King on the 15th of August 1919 and signed by Sir E. Bernard as representative of the Sudan Government and by the English Company on the 17th October 1919; and all this was accomplished in a secret manner.

SIR BERNARD. — It is *not* secret and I am ready to let you know its summary.

WAHBY PASHA. — The agreement is absolutely secret because it was not published in any Egyptian newspaper up to the present. Moreover, our Committee asked for a copy of it from His Excellency the

Prime Minister in a letter dated 14th May 1920 and it has not been answered till now in spite of the vital importance of knowing the quantity of water agreed upon to be given to the Syndicate and what its effect on Egypt will be [His Excellency read the letter as mentioned in the report submitted by the Egyptian Committee, page 11].

Mr. Gebbie. — This discussion has nothing to do with engineering matters and the Commission are not concerned with it.

Wahby Pasha. — I request you to put down this point in the minutes of your proceedings.

Mr. Gebbie. — No objection.

Sir Bernard. — As the Pasha has mentioned this to-day, I wish to state there has been no secrecy. As a matter of fact the conditions of the agreement have been published in newspapers, both English and Egyptian. There is nothing whatever secret about it, and if they wish to come to my office I will give them full facilities. It is only an arrangement for a period of 10 years, which may be increased to 14 years if the scheme turns out satisfactory. This scheme is in the interests of all concerned. The Government will get all the supervision done without having to employ a large staff of officials etc., and at the end of this period the entire scheme will become the property of the Sudan Government and the Sudanese. The land remains the property of the Sudanese.

Mr. Gebbie. — This discussion is not relevant, and it must stop.

Zaki Eff. — " Discussions on the technical problem " :— We beg to draw attention to the table in Page 32 of the Nile Control where will be found the water requirements of Egypt and if the figures in that table are proved to be incorrect, then the projects will be false, because they are based on that table and we will also explain that the adviser does not understand what is written in that table. We beg therefore to answer as follows :—

In the heading of the fourth column from the right of the table mentioned, the sign + will be found and at the bottom its explanation says that the figures in that column do not contain the water necessary for navigation in the river. Is that true ?

Sir MacDonald. — No, the sign + was put wrongly by the printers and the explanation below the table shows that the figures of *all* the table do not contain the water for navigation.

Zaki Eff. — Does the fig. 30 in the fifth cloumn opposite Mr. Hurst's name contain the water for navigation ?

Sir MacDonald. — Yes, it contains the water for navigation.

Zaki Eff. — This does not coincide with your first answer in

which you said that *all* the figures in the table do not contain the water for navigation, so which are we to take ?

Sir MacDonald. — From page 31 you will see that the figure 30 contains the water for navigation.

Zaki Eff. — If that figure contains the water necessary for navigation, then do all the figures in the same column contain the water for navigation ?

Sir MacDonald. — No.

Zaki Eff. — Then how do you put figures with different meanings in the same column and under the same heading ?

Mr. Gebbie. — What do you mean by asking these questions ?

Zaki Eff. — In order to prove the disorder and complication of the table and also that the adviser does not understand anything in that table.

Mr. Gebbie. — Methodical arrangement is one thing and the correctness of the figures is something else, so are the figures correct ?

Zaki Eff. — How can they be correct ? Will you see the figure 30 again and tell us whether this figure denotes the total water requirements, as stated in the heading of the column, or does not contain the " Basin Water " as stated in Page 31.

Sir MacDonald. — It does not contain the Basin Water.

Zaki Eff. — Do the other figures in the same column contain the Basin Water ?

Sir MacDonald. — Yes, they do.

Mr. Gebbie. — I don't care about the order of the table. Is the figure correct ?

Sir MacDonald. — In the margin of the table it is stated that the Basin Water, which is six milliards, should be added to the fig. 30.

Zaki Eff. — How do you estimate these six milliards for the basins while you stated, in page 51 of the Nile Control, that in a period of 40 days commencing the 10th August, the basins take their water at an average depth of 1.80 ms. If we consider this as correct, then the water requirements for the basins will be :—

1,300,000 × 1.80 × 4,200 × 120/100 = 11,900 say 12 milliards and *not* six milliards.

Sir MacDonald. — But, as stated on page 51, a depth of water of sixty cms. goes back into the river.

Zaki Eff. — Yes. But you stated (in the same page) that the water that goes back into the river is not used in irrigation, as the cultivated areas are not in need of it. So how do you bring in this amount of drainage water into your estimate, while at the same time you say that it is no use for cultivated lands ?

Sir MacDonald. — I am content to say that six milliards are enough for basin irrigation, but I leave this point for the Commission's decision and judgment.

Zaki Eff. — That is good. Let us go back to the fig. 30 again, to which if we add the six milliards, for the basins, as you say, and an allowance of 10 % for the losses according to your estimate in the table, then the total will be about 40 milliards, and *not* 30 as stated in the fourth column under Hurst's name.

Sir MacDonald. — No. The figure 30 contains the losses as shewn on page 31.

Mr. Gebbie. — What do you mean by all this discussion ? The table being in disorder does not interfere with the correctness of the figures.

Zaki Eff. — How can these figures be correct while the fig. 30 is entered in the fourth column bearing the heading of " Present-day requirements for all Egypt at Canal Heads." This means that the fig. 30 does not contain the losses between Aswan and the Canal Heads.

From these investigations, my only purpose is to prove that the figures do not mean anything in connection with their heading, and the Adviser does not understand how this table was made. So, the fig. 30, which is our point of investigation, does not contain the water for navigation and losses between Aswan and the canal heads, but it contains the water necessary for basin irrigation viz, six milliards according to his estimate while the figure 30 represents the water taken by the canals at the Delta Barrage, equalling 16.5 milliards; add what was taken by the Ibrahimia Canal which is 1.9 milliards, add to this 6 milliards for the basins and deduct .7 milliards seepage; the result will be 29.700, say 30 milliards.

This is quite different from what the Adviser said now.

Mr. Gebbie. — Il these figures submitted by the Ministry are incorrect and you have correct figures, then please offer them.

Zaki Eff. — All the Ministry figures are inaccurate and they were purposely made so to lessen the water requirements of Egypt, so as to enable the Ministry to spare a quantity of water for the Sudan and to prove the benefit of the Gebel Aulia Reservoir which will lose about

four milliards of water in evaporation, etc. uselessly while Egypt will require all that quantity of water in a year like 1913-1914.

Sir MacDonald. — "Zaki Eff. I know that you speak English well, so please speak in English."

Zaki Eff. — I know English but not in such a manner as to enable me to discuss fluently in it, but, in answer to your request, I will speak both in English and Arabic, but the latter should be taken in consideration only, and the interpreter must correct any mistakes in any translation.

Zaki Eff. — The most important point in our problem is the estimation of the present cultivated area in Egypt. Secondly, the water requirement for one feddan in the different seasons, so we will begin estimating the cultivated area :—

The area of lower Egypt cultivated under summer crops :—

3,100,000 feddans and not three millions as the Ministry estimate.

Sir MacDonald. — We have considered, in estimating the cultivated areas, the last Survey Department estimates.

Zaki Eff. — I have considered in my estimate :

(1) The Survey Department.

(2) The technical books studied in the Engineering School.

(3) The Government Official Reports.

(4) The Ministry's words which were quoted unwillingly and were not followed in the present estimate. The following are the proofs :-

1. In the report 1914-15 page 12, it is stated that the cultivated area of Lower Egypt is 3,094,949 feddans and this is distributed amongst the Irrigation Circles.

2. In the 1915-1916 report page 75, it is stated that the area cultivated in Lower Egypt is 3,097,941 feddans distributed among the different Irrigation Circles page 74, and in page 75 distributed among the provinces. It is also stated at the top of the latter page that the mentioned figures are taken from the Survey Department.

3. From the Annual Census of the Egyptian Government for the year 1916 page 114 we find that what has actually been cultivated in Lower Egypt is :—

1905-1906	—	3,132,538	Feddans.
1906-1907	—	3,167,077	,,
1907-1908	—	3,174,627	,,
1908-1909	—	3,122,411	,,
1909-1910	—	3,100,233	,,

4. From the Annual Census for the year 1916 page 114 we find that the average cultivated area for 15 years, from 1901-1902 to 1915-1916, is 3,100,000 feddans.

5. It is stated in page 31 of the Nile Control that the area under summer crop in the years 1912, 1913 and 1914 is 3,100,000 feddans.

6. In " Egyptian Irrigation " 3rd edition by Sir Willcocks page 109 it is stated that the cultivated area of Lower Egypt is 3,100,000 fedd.

So, I do not think, that after offering all these proofs one after the other for checking, can any one trust the Ministry's figure of 3 millions and does not consider our figure of 3,100,000 feddans.

II. The cultivated area of Upper Egypt is 2,300,000 feddans and *not* 2,200,000 as said by the Ministry. The following are the proofs :—

1. In " Egyptian Irrigation " page 109, the cultivated area of Upper Egypt is 2,251,000 feddans.

2. In " Nile Control " page 23, the perennially cultivated area of Middle and Upper Egypt is one million feddans, and the basins area is 1,300,000 feddans, that is, the total area of Upper Egypt is 2,300,000.

3. From the general annual census for the year 1916 page 114, it is stated that the average cultivated area of Upper Egypt in the period of 15 years up to 1916, with the addition of sharaqui lands according to the lowness of the Nile water surface in some years, as stated in page 136 in the above mentioned census, is 2,300,000 feddans at present.

III. The cultivated area of Upper Egypt, as mentioned, is 1,300,000 under perennial irrigation and 1,000,000 feddans under basin irrigation.

Mr. Gebbie. — You have reversed the Ministry's figures making the Basin Perennial and vice versa.

Zaki Eff. — I have purposely done that because it is the right way and here are the proofs :—

1. In " Nile Control " page II it is stated that the area of the basins and berms in Upper Egypt is 1,280,000 feddans, of which 240,000 feddans are under perennial irrigation.

Sir MacDonald. — Please read to the end so as to understand the rest of it.

Zaki Eff. — Please don't interrupt me. I understand everything so wait until I complete my speech then discuss what you like.

I have said that it is stated in page 11 of the " Nile Control " that the area of basins and berms is 1,280,000 feddans of which 240,000 feddans are cultivated perennially, some by machinery on the Nile and some irrigated from wells in the basins. If the Ministry meant to make an accurate estimate, it should have estimated what is irrigated from well and that from the Nile separately and deduct the former from the estimate. But at any rate we will consider the basins areas as :—

1,280,000-240,000=1,040,000 feddans say one million only ; then the perennially cultivated area of Upper Egypt will be 1,300,000 feddans.

2. The point previously stated taken from " Nile Control " is exactly the same as that written in " Egyptian Irrigation" third edition just as if it was copied from it.

MR. GEBBIE. — You go very far with your researches.

ZAKI EFF. — This is because I fight for the benefit of my country and for that, I wish to prove all what I say in a right manner, eventually I will be well equipped to fight against the false proofs and estimates which the ministry advances to crush our investigations and criticisms.

MR. GEBBIE. — Will you be as brief as possible. It is not necessary to offer any books and it is enough to mention only their names and the number of the page quoted. The summary of what was stated is that you wish to consider the following :—

3,100,000 feddans in Lower Egypt under Perennial Irrigation
1,300,000 ,, ,, Upper ,, ,, ,, ,,
1,000,000 ,, ,, Upper ,, ,, Basin ,,

5,400,000 feddans for the whole of Egypt and not 5,200,000 feddans as the Ministry states.

ZAKI EFF. — Yes.

MR. GEBBIE. — That is good.

ZAKI EFF. — Let us estimate the duty of water per feddan, at the present, in short not criticising the Ministry figures, but assuming them to be correct. We will take Mr. Dudgeon's (Adviser of Agriculture) and Mr. Molesworth's figures which are both entered in the " Nile Control," the former in page 19 and the latter in page 23 and the results obtained are as follows :—

DUDGEON'S ESTIMATE	MOLESWORTH'S ESTIMATE	AVERAGE.	
6588	6822	6705	for Lower Egypt.
7187	6562	6874	for Upper Egypt under perennial Irrigation.

Therefore the water requirements for the present perennially cultivated area at the canal heads will be :—

3,100,000 × 6705 = 20.8 Milliards.
1,300,000 × 6874 = 8.9 ,,

29.7

And as the Ministry estimates, for the Basin Irrigation of one Feddan at the Canal head, 5040 cu. ms., although we should not consider that figure and we must take 7600 ms. cu. as correct, as stated and explained before. While the Adviser puts this point for the Commission's decision, yet we will consider it as it stands. Therefore, the one million feddans under basin irrigation will require 5.04 milliards at the canal heads.

Then the average requirements of Egypt at the present will be :—

29.70 + 5.04 = 34.74 if we deduct .7 milliards for seepage and add 10 per cent for the losses as shewn in " Nile Control " page 32, we will get the water requirements to be 37.44 milliards. If we add 5 milliards

which are necessary for navigation, and for keeping the river section on its natural form, as the Ministry's estimates, we will get :

42.500 milliards and *not* 35.500 milliards as the Ministry estimates.

We have shewn clearly that Egypt requires 42.50 milliards and not 35.5 milliards as reported in the Ministry's estimate. It will be seen that the " Basins Water Requirements " are only six milliards according to the Ministry's estimation, but we have previously shewn that the correct figure should be nine milliards considering that the area is only one million feddans, and we left this point for the commission's judgment and decision.

Accordingly, Egypt's present requirements are 42.5 milliards and it is undeniable that this is a specially sacred right for Egypt on the Nile waters.

Mr. Cory, a member of your commission, admitted that right and stated that it could be estimated from the amount of water actually taken by Egypt in the last 10 years.

Mr. Cory. — Yes.

Zaki Eff. — We have requested, by letter dated 8th March 1920, his highness the Prime Minister, and again by a letter dated 13th March 1920, and lastly your Commission on the 14th June 1920, to send us the Nile Discharges observed at Aswan for these ten years, also the water that has passed down to the sea in the above mentioned ten years, for estimating the quantity of water actually taken by Egypt in those ten years. But neither the Ministry, nor you, have sent us this information up till now. Thus we were compelled to follow a technical way for estimating the above, and had to be satisfied to consider only seven years as that was all what is given in " Nile Control."

Mr. Cory. — This is adequate.

Zaki Eff. — We have sent these estimates and calculations to your commission, and I beg you to return them now so that I can read them to you as we have no duplicate.

The President to Mr. Capes : Where are these ?

Mr. Capes. — Here they are.

The President. — Are these calculations and estimates shewn in detail in your papers ?

Zaki Eff. — Yes.

The President. — That is enough; we will read them and study them carefully.

Zaki Eff. — From the estimates we offered to you, we find that Egypt has a sacred right to 45 milliards at present. From what is men-

tioned above, we see that Egypt requires 42.50 milliards, considering the Ministry's estimate, for the basins, which is six milliards, but her actual requirements are 45 milliards. So, in a year like 1913-1914 when the total discharge of the river was not more than 41 milliards, Egypt cannot spare even a drop of water for the Sudan or for the construction of the Gebel Aulia Reservoir which loses about four milliards in evaporation etc.

The Public Works Ministry, to be able to go on with these projects, has estimated Egypt's requirements, what will be lost by evaporation etc. in the Gebel Aulia Reservoir, and the water requirements for the Sudan, as follows :—

35.5 milliards Egypt's requirements.
3.2 ,, what will be lost by evaporation etc. by the Gebel Aulia Reservoir combined with Aswan.
1.6 ,, Sudan requirements for 300,000 feddans considered with Aswan.

40.3 milliards which is less than the lowest year of 1913-1914 when the total river discharge was 40.7 milliards. We have proved that this basis is incorrect, and explained that Egypt alone requires 45 milliards at present. Accordingly, any amount of water taken by the Sudan, before the increase of the water supply, will undoubtedly be against the interests of Egypt and very harmful, also the construction of the Gebel Aulia Reservoir whose losses will be about four milliards in evaporation etc., also any lands in the Sudan cultivated by the basin system, will also be most harmful to the interests of Egypt.

Our statement agrees with what Sir William Garstin thought when he proposed the scheme in 1902-1903 long before the English syndicate had been formed.

But when the Sudan syndicate was formed the interests of Egypt were overlooked and the projects suddenly become useful from every point whereas a short time before they had been considered both objectionable and harmful.

Mr. Gebbie. — You say that Egypt requires at least 42 1/2 milliards and not 34 as estimated by the M.P.W.

Zaki Eff. — Yes.

Mr. Gebbie. — What else ?

Zaki Eff. — On P. 23 we have the following calculations :

$$1{,}300{,}000 \times 4{,}200 \times 120/100 = 6{,}000.$$

The product is wrong. It is not so ?

Sir MacDonald. — That is a misprint.

Zaki Eff. — The equation consists of 4 figures. In which of these does the misprint occur ?

Sir MacDonald. — The figure 1,300,000 representing the total area of the basins should be 1,200,000.

ZAKI EFF. — That is not true. If we refer to p. 11 in which you have stated the area of the basins and the area of the whole country in detail we shall find that you have estimated the area of the basins at :

1,280,000 feddans or in round figures 1,300,000.

And in the " Egyptian Irrigation " 3rd edition p. 344 this area is estimated at 1,286,635 i.e. 1,300,000.

Figure 1,300,000 is therefore true. There is no misprint in it. The product is purposely reduced in order to underrate Egypt's requirements.

SIR MACDONALD did not answer.

ZAKI EFF. — On pages 19, 23, 26 on which Egypt's requirements of water are estimated by the M.P.W. the area of Lower Egypt is considered to be 3,000,000 fed. The area under the basin system in Upper Egypt is estimated at 1,000,000. But on p. 31 when Egypt's future requirements were considered, the area of Lower Egypt is estimated at 3,100,000 and that the area under basin irrigation at 1,000,000 instead of 3,100,000 and 1,100,000 respectively.

Why is it that different figures are adopted for the same subject in the same memorandum ?

SIR MAC. — There is no reason. Only in the first case we are dealing with Egypt's present needs whereas in the other we are dealing with Egypt's future requirements.

ZAKI EFF. — That does not necessitate a change in the area increasing it in one case and decreasing it in another. In both cases the area should be the same for they both deal with the present area under cultivation. The change is purposely made to lessen the amount of water required by Egypt in both cases. The following is my proof :—

On pages 19, 23, 26, the figures representing the areas are used as multiples. Whenever the figures are reduced the product, i.e. Egypt's water requirements at present, is reduced. It is for this reason that the M.P.W. underestimated the area of the cultivated lands.

On p. 31 the figures are used as dividends; and so by reducing them the result, i.e. Egypt's water requirements, is reduced. This is why the true figures are used although they are greater than the figures formerly employed.

SIR MAC. — You are comparing different cases.

ZAKI EFF. — I am simply stating the area of Egypt at present which should be one and the same. These calculations were revised by the M.P.W. No contradictory figures should therefore be allowed especially in this case. The only explanation is that the M.P.W. has some aim in changing the figures.

SIR MAC. — What do you mean ? The calculations in the former pages and those on p. 31 were made by different persons.

ZAKI EFF. — I know that. Will you allow me to come near you so as to explain to you the aim of the M.P.W. in doing so.

SIR MAC. — Of course.

ZAKI EFF. — It is true that the figure on p. 31 is Mr. Hurst's and those on p.p. 23, 26, 19 are given by other men, but the Ministry that has published the book should have read over the book before publishing it as the responsibility falls upon it. By increasing the area at one time and decreasing it at another the M.P.W. compromises itself, especially when this increase and decrease leads to the reduction of Egypt's water requirements.

MR. HURST. — My figures mentioned on p. 31 represent the area cultivated in 1912, 1914. I have adopted them from the reports of the Survey Department. This is not the case of the figures on p.p. 23, 26, 19.

ZAKI EFF. — I know that. If figure 30 is correct why then was it not adopted as the basis of the calculations on p.p. 19, 23, 26, when Egypt's water requirements at the present time were considered ?

The obvious reason is that by adopting it as a basis of the calculations on p.p. 23, 26, 19, the water needed by Egypt at present will be much greater thus leading to the downfall of the projects.

I require five minutes rest as I have got tired.

MR. GEBBIE. — All right.

ZAKI EFF. — Abdel Kawy Eff. Ahmed will speak.

ABDEL KAWI EFF. AHMED. — I wish to speak about Egypt's water requirements not during the whole year but during the two months of August and September.

In the table on p. 66 Egypt's requirements in those two months are considered to be 10.73 milliards.

To estimate the accuracy of this figure we shall consider its items.

Irrigation in Egypt is carried on in two ways, perennial and basin. Perennial irrigation is carried on in Lower and Middle Egypt, basin irrigation in Upper Egypt. We shall consider the amount of water required by each of these three divisions.

[Here Mr. Hurst drew the attention of Abdel Kawy Eff. to the heading of the table spoken of which is " The Ideal Requirements of agriculture at Present including the Basin Waters "].

Abdel Kawy Eff. asked whether this was not the amount that should be given to Egypt in those two months at the present time as mentioned in the table. Mr. Hurst answered in the affirmative.

ABDEL KAWY EFF. then went up to the blackboard to prove that Egypt requires more than the amount given by the M.P.W.

On p. 66 of " Nile Control " it is stated 10.73 milliards but :—

1. The area of the basins as stated in " Nile Control " is :

1,200,000 feddans. The height of the water as stated in " Nile Control " is 1.80.

Therefore 1,200,000 fed. × 4,200 × 1.80 = 9 milliards is the water required for the basins.

2. The area of Lower Egypt as stated in " Nile Control " is 3,000,000 feddans.

The requirement per feddan in the two months is (837 + 889) c.m.

This gives about 5 milliards.

3. The area of the land under perennial irrigation in Upper Egypt is 1,100,000 feddans.

The requirements per feddan in the two months are (1070 + 1110)c.m.

This gives 1,100,000 × (1070 + 1110) × 5250/6850 = 1.8.

Total about 16 milliards at canal heads.

By adding to this figure 10 per cent which is the amount wasted by evaporation and seepage, etc., from Aswan to the Canal heads we get about 18 milliards.

Mr. Gebbie. — From the foregoing arguments I understand that the Committee estimates Egypt's requirements at 42 1/2 milliards whereas the M.P.W. estimates these at 34.

[The Adviser then asked Mr. Hurst to answer, telling him that the table on p. 66 is of his own making].

Mr. Hurst. — The heading of the table is " The Ideal Requirements for Present Irrigation including the Basin Waters'.

Abdel Kawy Eff. — Do I understand that this is what should be given to Egypt in these two months ?

Mr. Hurst. — Yes. But you have compared the tables of different men.

Abdel Kawy Eff. — I know that the result is the Adviser's but the items are Mr. Hurst's. What I criticise is that the difference in the two statements should be in the proportion of 10 to 18.

Sir Mac. — Mr. Molesworth was too generous and his calculations were based on the statements of the fellaheen.

Wahby Pasha. — May we rely upon the estimates of Mr. Molesworth and Mr. Yennidunia when they give the water required by Egypt at present ?

Sir Mac. — Mr. Yennidunia made the estimates and Mr. Molesworth is responsible for them. Mr. Molesworth has agreed with us to reduce the Egypt future requirements from 66 milliards to 58. He has based these estimates on the statements of the fellaheen who cultivate and irrigate the land.

Mr. Molesworth. — The 58 milliards are based on the estimates of the fellaheen who always exaggerate their needs.

Wahby Pasha. — We cannot accept these statements : We have all worked with you in Irrigation and cultivation. This statement of Mr. Molesworth should not be made to a man like myself. We never relied upon the statements of the fellaheen who have no knowledge of what their lands require.

I wonder why the estimate of Mr. Molesworth after being 66 milliards was lessened to 58; while at the same time, it is said to be taken from the farmers. After all that, the Adviser does not consider either the former or the latter, and considers only 50 milliards.

At this moment a farmer who was present at the meeting sent a card to H.E. Abdalla Pasha Wahby from which the following was read : " I am sure that there is not a single fellah who can estimate the amount of water required per feddan either by the metre or the litre. The only thing he knows is what time the feddan requires to be irrigated." It therefore appears that the fellah cannot estimate in cubic metres or in litres the amount of water required per feddan. Mr. Molesworth is not justified in saying that he has based his calculations on the statements of the fellaheen.

Mr. Newhouse. — The fellah estimates the depth of the water by the fist and then Mr. Molesworth changes this into cubic metres or litres.

Wahby Pasha. — We have ascertained lately that Mr. Molesworth and Mr. Yennidunia made a detailed statement of the requirements of Egypt in which they mentioned the quantity as being about 67 milliards. Will Mr. Molesworth be kind enough to shew it to the commission?

Mr. Molesworth. — I do not remember that statement.

Wahby Pasha. — But if I offer a copy of the above statement ?

Mr. Molesworth. — I will be much obliged. [He then left the meeting and went away].

Wahby Pasha, then, promised to give the commission a copy of the above (1).

Sir MacDonald has confessed in front of the Commission that Mr. Molesworth estimated that Egypt's requirement are 66 milliards and they agreed together to reduce that figure to 58, after that, the figure was reduced again to 50 milliards without understanding why this was done, also the Adviser brought forward, in his book "Nile Control," Mr. Dudgeon's estimate as 53 milliards, but the latter (formerly Technical Adviser to the Ministry of Agriculture) is a specialist in agriculture and not in engineering. Also Mr. Hurst's estimate which is 51 milliards; but he is a specialist in Physics, who was told by the Ministry to collect all the statements and notes given to him and put them together in the form of a book which was eventually called, by the Adviser, " Nile Control."

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(1) A copy of the above Statement was sent to Mr. Capes, the Secretary of the Commission, in London, on the 9th July 1920, also a copy was given to Mr. Cory, the American member of the commission on the 5th July 1920. The Statement proves that Egypt's requirements are 67.522 milliards.

It was anticipated, from a technical point of view, that the Adviser will consider Messrs. Molesworth's and Yennidunia's estimate of 66 milliards because they have based their estimates on actual observations and experiments, and also they are able and practised engineers.

From this and from the proofs we have given both in our report and here before you of all these complications, it is clear that all the calculations are based on the opinions of individual persons whose statements are full of discrepancies and contradictions. So is all this not sufficient to make us doubt the accuracy of their estimates and to prove that any study that was made of the schemes was made by individual persons and was not based on true scientific grounds ? If this is so is it not advisable nay indispensable that these projects should be carefully studied by an impartial committee of English, French, American, Italian and Egyptian engineers ?

Has it not come to the knowledge of the Commission that when France, a country which is full of capable engineers — wanted to construct works for the irrigation of certain areas it has asked engineers from different parts of the world to submit to the French Government various schemes for the construction of these works? In acting thus, the French Government desired to avoid any mistake, that might otherwise be made if these works were studied by its engineers alone ?

Is it not reasonable that the Nile Projects should also be dealt with in a similar manner ?

Zaki Eff. — Let us suppose that the estimates of Mr. Molesworth are wrong because they have been based upon the statements of the exaggerating fellaheen. Will the Adviser be kind enough to explain to us the means, theoretical or practical, on which the M.P.W. has based its estimates of the water required by this country and has found out that the amount needed is 50 milliards and not 58 as stated by the exaggerating fellaheen ?

I shall save the Adviser the trouble of answering my question, for this answer is to be found on p. 34 of " Nile Control."

.... " The adopted mean for monthly requirements is based on estimates *b* and *c* reduced to give a total of 50,000 millions. This figure was taken as being the nearest round number to the mean of the estimates.".

This means that the ministry has not based its estimates of the water required every month on solid scientific grounds but, on the contrary, has built it on the average of the estimates of Mr. Molesworth and Mr. Cooper. This average was then reduced at haphazard, so that the total should not exceed 50 milliards. The M.P.W. states that the " figure was taken as being the nearest round number to the mean of the estimates of Mr .Molesworth and Mr. Cooper."

But this is not true. For the mean is 53,300 (Mr. Molesworth's estimate being 58,400 as given in p. 34 and Mr. Cooper's 48,200). The nearest round figure is therefore 54 and not 50 milliards. More surprising still is the fact that the ministry having estimated the water requirements every month of the year (upon no basis of course) and having found out that they make a total of 52 milliards has intentionally inserted 50 instead of 52.

Sir MacDonald. — This is not true. The total is 50 and not 52.

WAHBY PASHA. — The total is 52. I have previously drawn your attention to it.

ZAKI EFF. — Will you kindly go over the addition.

SIR MACDONALD. — It is true that the total is 52 not 50 but this is a misprint.

ZAKI EFF. — It is always so. Whenever we catch you out you say it is a misprint. You then change the figures and cannot give any proof of their accuracy. That is because your estimates are based on no scientific grounds and so it is impossible to discuss them with you. They are simply put hap-hazard and for this reason you can and do make any change you like in them.

Such projects as these costing, as they do, some 35 million pounds should not be so full of these so-called misprints unless the authors are able to prove that they are really misprints and not intentional faults purposely made to reduce Egypt's water requirements and thus make it appear that much water can be spared by Egypt to the Sudan.

It is not strange that all these misprints are all against Egypt and that not one of them turns to the good of the country ?

ZAKI EFF. — To-day I have given my opinion as a member of the Committee of Egyptian Engineers. But I have also submitted to the Commission other criticisms of my own which I am ready to prove and explain. At the same time I wish to submit a scheme which if carried out will cause no harm to this country and furthermore it will spare to the Sudan more water than the ministry's projects would afford. The criticisms I have submitted are 50 in number.

THE PRESIDENT. — Will to-morrow suit you ?

ZAKI EFF. — I have no objection.

THE PRESIDENT. — The discussion will be private not public as has been to-day. Do you agree ?

ZAKI EFF. — The discussion will be purely technical; so I have no objection to its being private.

THE PRESIDENT. — Let the meeting be to-morrow at 10 a.m.

WAHBY PASHA. — On reading the English version of our report (as translated by the Nile Commission's translator) we found various discrepancies and omissions which may give a wrong idea of our criticisms. We have therefore prepared a correct translation of the report,(1) a copy of which will shortly be sent to you and this is the one to be depended upon.

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(1) The corrected translation of the Criticism by the Committee of Egyptian Engineers was sent to the Secretary of the Nile Projects Commission on 26th June 1920.

Mr. Gebbie. — Thank you.

Wahby Pasha. — The Ministry states that 1913-1914 was the lowest on record. But we have submitted to you a list in which there are 82 records which are much less than that of 1913-1914. This list comprises records taken from 629 to 1913.

An Egyptian historian submitted a manuscript written in 746 H. The M. S. is called "Al Nugoom el Zarira fi Akhbar Mulook Misr Wal Kahira." With this MS. was a memorandum which is an extract from it. This memorandum explains the distress which occurred in Egypt in the above year. Sir MacDonald asked him to read it and it was read as follows :—

" In 746, Mohamedan Calender, the Nile was very short of water to such an extent that the people waded across from the gauge and Old Cairo. There was a road across from Boulac to Kasr El Eini Beach, i.e., from Boulac to Gezeret El Nil, and thence to Kasr El Eini. The water went so far from the shore that water carries had to get it from opposite Embabah and the price of the water skin contents went up to 2 dirhams after one eighth of a dirham. The people complained to Irghan El Alli who informed the Sultan of the high cost of water. The Sultan with the Princes and many engineers, rode down and found that it was too late to increase the Nile waters, and it was decided to put the embankment across from Geezah to the Gauge to deviate the water to Cairo. This was done by transporting earth by boats, and when the bank was made, the water came slightly to Old Cairo Beach; but when the water got too high for the bank it breached, and was washed away.

Sir MacDonald. — Is the case mentioned in the manuscript in the flood period ?

Moh. Bey Ismail. — It is said that it was in the flood time.

Sir MacDonald. — Your strange book, Pasha, proves the need for these projects. Will you kindly give me this extract to translate.

Wahby Pasha. — You may have it and the book too. Mohammedan Law, Napoleonic Law and heavenly Law all forbid the taking of water from the Blue Nile for the benefit of the Sudan so long as Egypt has a sacred right in all the Blue Nile waters.

The Committee of native engineers has shown you that the aim of the projects is to give the water of the Blue Nile entirely to the Sudan and that of the White Nile to Egypt in future. The water of the Blue Nile is indispensable to Egypt owing to the fertile silt it contains and on which the productiveness of Egypt depends. But the water of the White Nile is poisonous and harmful and so we object to the construction of any dam across the Blue Nile; for this will endanger the life of the Egyptians and deprive them of the rich silt of the Blue Nile. The Committee of native engineers begs the Nile Commission to investigate the matter carefully and not to leave such important projects in the hands of private individuals.

Sir MacDonald. — We do not keep the water of the Blue Nile entirely for the Sudan and that of the White Nile for Egypt.

Abdel Kawy Eff. — Abdalla Pasha does not say that this is the case at present but that this is what is intended in future.

[He then read an extract from the "Nile Control" to prove this.]

Abdalla Pasha. — Egypt needs all the water of the Blue Nile in summer and therefore no summer crops should be grown as these would take the summer water required by Egypt.

Sir MacDonald. — The Gezira will not take the water of the Blue Nile in summer. It will simply take the flood water of the Blue Nile which will be stored at Mikwar instead of being wasted into the sea. After the 19th of January all the water of the Blue Nile will pass freely to Egypt, for the water of the Makwar reservoir will be sufficient for agriculture in the Sudan.

Zaki Eff. — But this water which will be taken by the Sudan is the right of Egypt; for in a year like 1913-14 there is no surplus water during or after the flood which can be taken by the Sudan. The cultivated land of Egypt needs even at the present time all the flood water.

Sir MacDonald. — This is another point. If it is proved that the water of the Nile is not more than the requirements of Egypt as you say, then the Sudan should not take any water.

The Commission will decide this point.

Zaki Eff. — One question more. Why is it that the Sudan should take all its water from the Blue Nile and not from the White Nile.

Has the M.P.W. any objection to the fact that the Sudan should take its proportionate share from the main Nile, its tributaries, and its lakes as Egypt does ?

Sir MacDonald. — Of course there is no objection. It is only fair and just that this should be the case.

Mr. Cory. — The Commission has now fully understood all that the Egyptian Engineers want to say. These criticisms will be carefully considered by us.

Abdel Kawy Eff. — The Egyptian Engineers come here before the Nile Commission and have not criticised the Nile Projects for the mere sake of criticism or for the purpose of depriving the Sudan of its share of the Nile water. Egypt and the Sudan are one inseparable whole. But we have seen the various discrepancies in the figures taken as the basis for these schemes. As Engineers we have simply answered the invitation of

the Nile Commission which has asked every body who sees any fault in the scheme to lay it before it. We have noticed the strange way by which these schemes were studied, we have seen the truth set aside and for this reason we have come here. As Egyptians it did not behove us to appear before this commission admitting that it has the right to give the final decision in these vital schemes. We still believe that the decision should be postponed, not only because of the faults that have appeared in the projects themselves, but because the political status of Egypt has not been fixed. As the political problem is on its way to solution, the projects should, as a matter of course, be postponed.

Mr. Gebbie. — Political problems should not interfere with our investigation which is purely in the technical points.

Wahby Pasha. — On that ground we have come here hoping that we should assist you to arrive at the truth which, we hope is the aim of us all.

Sir MacDonald. — Although there is some difference of opinion between the M.P.W. and Abdalla Pasha Wahby and his colleagues in the purely technical points, yet I feel much obliged to them for the honest, unbiassed interest they have taken in the Nile Projects.

Wahby Pasha. — The Committee of Egyptian Engineers thank you for this acknowledgement.

THE MEETING THEN ENDED at 1 p.m.

The Commission promised Ibrahim Eff. Zaki to make a private meeting in the next day to discuss with him in his own personal investigation, at 10 a.m.

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